

C l a i m s

1. Method for determining a correlation phase between a
signal received at a receiver and an available
5 replica sequence by using a matched filter checking
various correlation phases, said matched filter
multiplying samples (21) of said received signal with
samples (22) of said replica sequence and summing the
resulting products to obtain a correlation value for
10 a specific correlation phase, which samples (21) of
said received signal and which samples (22) of said
available replica sequence are shifted relative to
each other for each correlation phase which is to be
checked, wherein results obtained in the calculations
15 for one correlation phase are used by said matched
filter for calculations for a subsequent correlation
phase.
2. Method according to claim 1, wherein said matched
20 filter multiplies said samples (21) of said received
signal elementwise with samples (22) of said replica
sequence.
3. Method according to claim 1, wherein said received
25 signal comprises a binary sequence.
4. Method according to claim 3, wherein possible values
of said binary sequence are +1 and -1.
- 30 5. Method according to claim 4, wherein C_i constitutes a
determined correlation value for an i^{th} checked
correlation phase, wherein N is a length of said
binary sequence, wherein x_{j+i} constitutes a j^{th} sample
of said received signal for said i^{th} correlation

phase, wherein the samples (22) of said replica sequence are not shifted for different correlation phases which are to be checked, wherein r_j constitutes a j^{th} sample of said replica sequence, wherein a set J_+ comprises the indices j for which

$$(r_j = 1 \ \& \ r_{j-1} = 1) \text{ OR } (r_j = -1 \ \& \ r_{j-1} = -1),$$

and wherein a correlation value C_{i+1} for the $(i+1)^{\text{th}}$ correlation phase is calculated as:

$$C_{i+1} = -C_i - r_0 x_i + r_{N-1} x_{i+N} + \sum_{j \in J_+} 2 * r_j x_{j+i}.$$

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6. Method according to claim 4, wherein C_i constitutes the determined correlation value for an i^{th} checked correlation phase i , wherein N is the length of said binary sequence, wherein x_{j+i} constitutes a j^{th} sample of said received signal for said i^{th} correlation phase, wherein the samples (22) of said replica sequence are not shifted for the different correlation phases which are to be checked, wherein r_j constitutes a j^{th} samples of a said replica sequence, wherein a set J_- comprises the indices j for which
$$(r_j = 1 \ \& \ r_{j-1} = -1) \text{ OR } (r_j = -1 \ \& \ r_{j-1} = 1),$$

and wherein a correlation value C_{i+1} for the $(i+1)^{\text{th}}$ correlation phase is calculated as:

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$$C_{i+1} = C_i - r_0 x_i + r_{N-1} x_{i+N} - \sum_{j \in J_-} 2 * r_j x_{j+i}.$$

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7. Method according to claim 4, wherein C_i constitutes a determined correlation value for an i^{th} checked correlation phase, wherein N is the length of said binary sequence, wherein x_{j+i} constitutes a j^{th} sample of said received signal for said i^{th} correlation phase, wherein the samples (22) of said replica

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sequence are not shifted for the different correlation phases which are to be checked, wherein r_j constitutes a j^{th} sample of said replica sequence, wherein a set J_+ comprises the indices j for which
5 $(r_j = 1 \ \& \ r_{j-1} = 1) \text{ OR } (r_j = -1 \ \& \ r_{j-1} = -1)$, wherein a set J_- comprises the indices j for which $(r_j = 1 \ \& \ r_{j-1} = -1) \text{ OR } (r_j = -1 \ \& \ r_{j-1} = 1)$, and wherein a correlation value C_{i+1} for the $(i+1)^{\text{th}}$ correlation phase is calculated as:

$$10 \quad C_{i+1} = -C_i - r_0 x_i + r_{N-1} x_{i+N} + \sum_{j \in J_+} 2 * r_j x_{j+i} ,$$

if the size of said set J_- is larger than the size of said set J_+ , and as:

$$C_{i+1} = C_i - r_0 x_i + r_{N-1} x_{i+N} - \sum_{j \in J_-} 2 * r_j x_{j+i} ,$$

if the size of said set J_+ is larger than the size of
15 said set J_- .

8. Method according to claim 1, further comprising a subsequent coherent and/or noncoherent processing for handling signals of low strength.
- 20 9. Method according to claim 1, wherein said received signal is a code modulated signal, and wherein said replica sequence is a replica code sequence.
- 25 10. Method according to claim 9, wherein said code modulation of said received code modulated signal is a Code Division Multiple Access (CDMA) spread spectrum modulation.

11. Use of a method according to claim 1 in a process for acquisition and/or tracking of signals received at a receiver.
- 5 12. Receiver comprising
receiving means for receiving signals; and
processing means for carrying out the method
according to claim 1.
- 10 13. Receiver according to claim 12, which receiver is a receiver of a positioning system.
14. Electronic device comprising a receiver according to claim 12.
- 15 15. Electronic device according to claim 14, wherein said electronic device is a mobile terminal capable of communicating with a communication network.
- 20 16. Device comprising
means for receiving from a receiver information on signals received by said receiver; and
processing means for carrying out the method according to claim 1.
- 25 17. Device according to claim 16, which device is a network element of a network.

18. System comprising

a receiver comprising means for receiving
signals, and means for providing information on
received signals; and

5 a device according to claim 16.

19. System comprising

a receiver according to claim 12; and

a device for providing assistance data to said
10 receiver.

20. System according to claim 19, wherein said device is
a network element of a network.

15 21. System according to claim 19, wherein said system is
a positioning system.

22. System according to claim 18, wherein said system is
a positioning system.

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